

Kings River Watershed - Dinkey Creek Dam and Reservoir

Description of Options

Dinkey Creek is within the upper watershed of the North Fork of the Kings River. A dam at Dinkey Creek would be located within Sierra National Forest at an elevation of approximately 5,425 feet MSL. It would be constructed as a zoned rockfill dam, approximately 340 feet high and 1,600 feet long. Full reservoir capacity would be approximately 90,000 acre-feet (Figure 5-14). This option would include a 70-foot wide spillway on the right abutment with discharge bucket, two power plants, a second diversion dam, connecting tunnels, penstocks, and surge tanks. The diversion tunnels together would total 46,000 feet in length. The power plants would each consist of a single generating unit, 26,000 kW and 63,000 kW, respectively.

Water stored in a new reservoir at Dinkey Creek would be released to Dinkey Creek, which flows into the North Fork of the Kings River. Dinkey Creek discharges would offset releases from Millerton Lake to the San Joaquin River through exchange.

Engineering and Environmental Findings

Site conditions appear suitable for construction. The dam would be founded on hard granite. Pervious raw materials are available, though not quantified or tested. Although deposits of impervious materials containing a high percentage of fines were not noted in the vicinity of the dam site, they may be found in nearby meadow areas. Paved county roads are within one mile of the dam site and graded roads pass both the right and left abutments. A staging area could be situated 1.5 miles upstream of the proposed dam site, where the canyon widens.

Adverse environmental impacts would be expected in all categories assessed – botany, wildlife, aquatic biology and water quality, recreation, and land use. In particular, a reservoir at Dinkey Creek would fundamentally alter the existing recreation based community. There is potential for adverse impacts to fisheries and fishing-oriented recreation resources. A reduction in flow, particularly during spring and summer when rainbow trout are spawning and the young are growing, could affect physical habitat availability. Changes in water temperature below the dam could adversely impact trout and the dam would impede migration.

Although remote, Dinkey Creek is a popular recreation area and trout fishing destination. Several campgrounds and residences are located near the stream. The area that would be inundated includes two organization camps, recreation residences, paved and unpaved roads that provide access on both sides of the stream to recreational resources in the Sierra National Forest. Adverse regional land use impacts could also be expected. The community of Dinkey Creek and nearby resorts provides lodging and other recreation oriented services. The area surrounding the proposed inundation pool contains an organization camp, a public cabin complex, numerous recreation residences, developed campgrounds, picnic areas, trails, and parking areas. Inundation of roads and recreational resources they serve would adversely impact an entire established community and may be unmitigable. This option will be dropped from further consideration

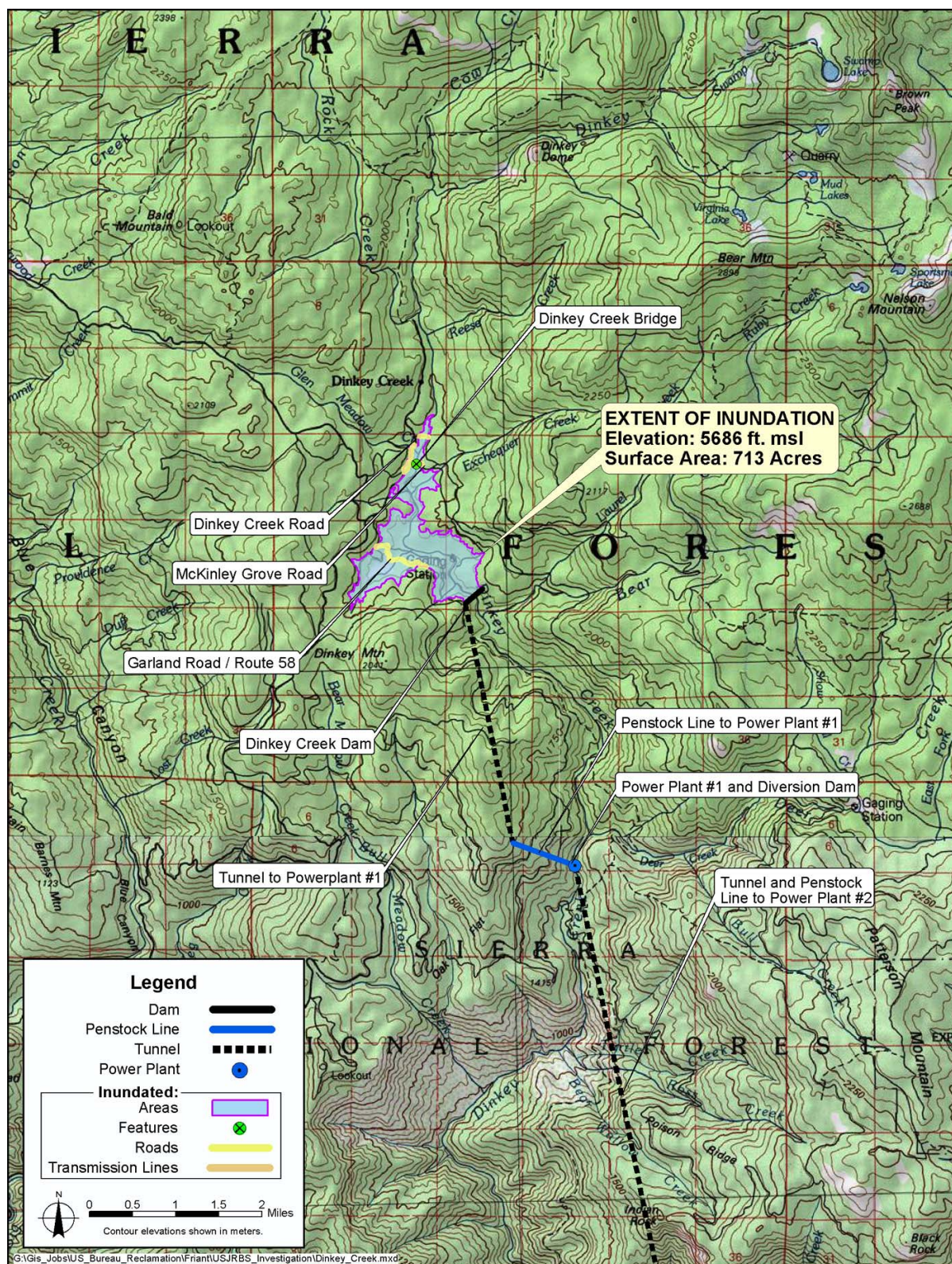


FIGURE 5-14. DINKEY CREEK RESERVOIR OPTION

Kaweah River Watershed - Dry Creek Dam and Reservoir

Description of Options

Dry Creek Dam and Reservoir would be a new facility on Dry Creek, which is a tributary to the Kaweah River just downstream and northwest of Terminus Dam. The dam site is in Tulare County, about 25 miles east and north of Visalia, north of the community of Lemoncove, and about 1¼ miles north of Dry Creek's confluence with the Kaweah River. The dam would be a 200-foot high roller-compacted concrete (RCC) structure with a crest length of approximately 3,210 feet, and would impound a reservoir with a storage capacity of up to 70,000 acre-feet (Figure 5-15).

Water would be diverted from Lake Kaweah through a 7,600-foot long gravity tunnel, 12 feet in diameter. The new reservoir would also capture natural runoff from Dry Creek. Stored water would be released to Dry Creek, flow down the Kaweah or St. Johns rivers to the Friant-Kern Canal, and used in lieu of deliveries from Millerton Lake through exchange. A like amount of Millerton Lake water could be released to the San Joaquin River.

Engineering and Environmental Findings

No serious issues related to construction requirements are evident. The dam and reservoir site is generally undeveloped with the exception a few rural residential properties. The dam site is underlain by competent hard rock, and sufficient sand and gravel would be available from a large nearby active quarry. A road provides direct access to the site, staging and lay down areas are located immediately upstream and downstream, and electrical power is available from the powerhouse at Terminus Dam or other nearby commercial sources.

Creation of the Dry Creek Reservoir would result in adverse impacts to botany resources. A sycamore alluvial woodland (SAW) exists near the confluence of Dry Creek and the Kaweah River. Although sycamore trees are common, SAW has been described as a "very rare and essentially irreplaceable habitat type" and the Dry Creek stand as one of the largest in the Central Valley (Carson, 1989). There are fewer than six viable occurrences and/or less than 2,000 acres in California and worldwide (Prose, 2002). Reservoir construction and water diversion are considered threats to SAW, as sycamores have little tolerance to artificially manipulated water levels (Prose, 2002). Sexual regeneration of SAW depends upon substantial scour caused by flood events (Enstrom, 2002). Successful replacement of SAW is considered unlikely and its destruction is therefore unmitigable (Enstrom, 2002).

Riparian habitat that may also host sensitive species such as willow flycatcher, foothill yellow-legged frog and western pond turtle. In addition, several special-status plant species are recorded around the Dry Creek area including a population of Kaweah brodiaea (*Brodiaea insignis*, state-listed as endangered) and a very large population of spiny-sealed button-celery (*Eryngium spinosepalum*, California Native Plant Society List 1B). The principal effects on aquatic biological resources would result from replacement of a stream environment with lacustrine habitat. The most likely native fish species to be affected would be California roach, although its presence in Dry Creek is not known. In sum, no major conflicts with construction requirements are foreseen.

This option would result in adverse and potentially unmitigable impacts to SAW habitat. Therefore, it will be dropped from further consideration.

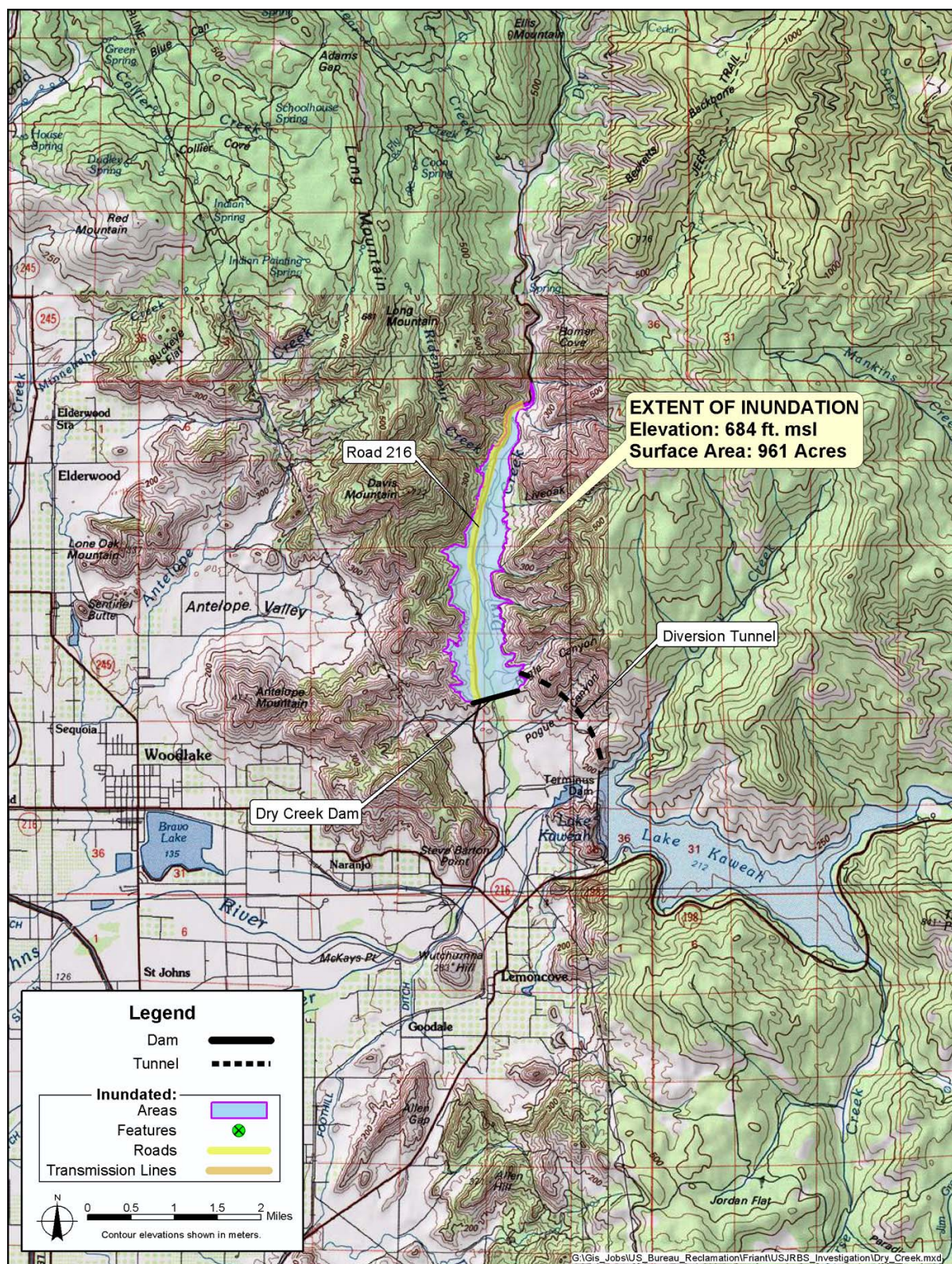


FIGURE 5-15. DRY CREEK RESERVOIR OPTION

Kaweah River Watershed - Yokohl Valley Dam and Reservoir

Description of Options

Yokohl Valley Dam would be constructed approximately 15 miles east of Visalia and 8 miles south of Lake Kaweah. A 260-foot high earthfill dam, with a crest length just under 3,000 feet, would create a 450,000 acre-feet. Two small saddle dams in the hills west of the main dam site would be required (Figure 5-16).

Two configurations have been previously studied, based on different sources of water. One option would be a pumped storage project that would divert water from the Friant-Kern Canal. This is a variation of an option that was described initially in a study of the Mid-Valley Canal by USBR. A second option would divert and pump water from Lake Kaweah during flood periods via an 8-mile long, 10-foot diameter tunnel. In both cases, supplementary flows would come from natural runoff in Yokohl Creek. Stored water would be released to Yokohl Creek and directed to the Friant-Kern Canal to supplement CVP deliveries or to offset releases from Millerton Lake to the San Joaquin River. Only the first option, off canal storage from the Friant-Kern Canal is considered in this Investigation.

Engineering and Environmental Findings

Site characteristics appear to pose no barriers to construction. Underlying rock conditions would be adequate for a dam foundation, sufficient impervious, pervious, and riprap materials exist within 2-miles of the proposed damsite, and potential staging and lay down areas are located immediately upstream and downstream of the project site. An improved road provides access directly to the dam site and electrical power would likely be available from sources in Exeter or along Highway 198.

Most of the inundated area would be common grassland in Yokohl Valley. However, the valley may also support substantial wetland habitat, including vernal pools. Populations of the flower Tulare pseudobahia, (a.k.a. San Joaquin adobe sunburst, *Pseudobahia peirsonii*), a state-listed endangered and federally listed threatened species, are known to have occurred historically in Yokohl Valley. Other special status plants are also likely to be present. Impacts to wildlife would be low and no fish were observed in Yokohl Creek during the May 2002 field visit.

Numerous cultural resources, including pictographs, native gathering and processing sites, trails, and homesteads, are known to be present and there may be additional sites not yet recorded. Further site investigations and research regarding significance and mitigation requirements would be necessary. No recreational resources would be affected, only private lands. Land use impacts would be relatively low, and would be related to relocation of scattered residences along Yokohl Drive. The reservoir would be within the view of a new housing development off of Route 217 to the northwest.

No significant technical issues arise related to the physical ability to construct the proposed storage facility. With the exception of botanical and cultural resources, few adverse environmental impacts are anticipated to resources known to occupy the site. This option will be retained for further consideration.

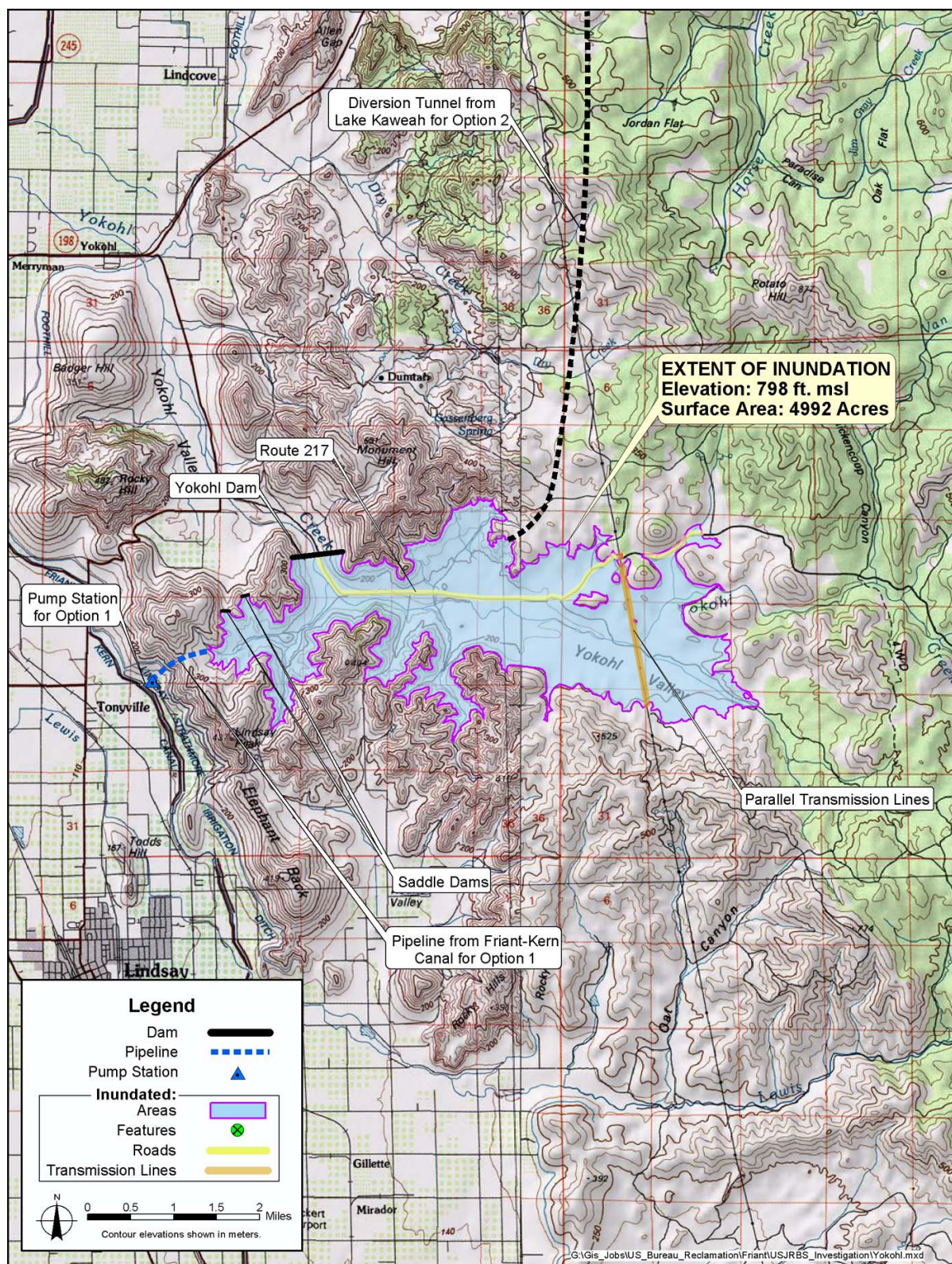


FIGURE 5-16. YOKOHL VALLEY RESERVOIR OPTION

Tule River Watershed - Hungry Hollow Dam and Reservoir

Description of Options

Hungry Hollow Dam and Reservoir would be constructed on Deer Creek, about 3 miles south of Lake Success and 6 miles east of Porterville. The new facility would be constructed on Deer Creek, a tributary to the Tule River, downstream of Success Dam and Reservoir. The dam would be a zoned earthfill structure 267 feet in height and 5,200 feet in length that would impound an off-stream reservoir with a storage capacity of up to 800,000 acre-feet (Figure 5-17). Additional features would include two saddle dams, a spillway, outlet works, and relief wells along the downstream toe of the dam.

Two configurations have been previously considered. The first would divert water from the Friant-Kern Canal via a two-way canal and pumping it into the reservoir. This would require three pump stations and two small regulating reservoirs. Stored water would be conveyed back to the Friant-Kern Canal. The second option involves diverting water from the Tule River at Lake Success and pumping it into Hungry Hollow Reservoir via a 10-foot diameter tunnel nearly 3 miles in length. In this case, stored water would be released down Deer Creek and diverted into the Friant-Kern Canal in exchange of releases from Millerton Lake.

Engineering and Environmental Findings

Extensive young alluvial deposits, over 300 feet thick, lie beneath the axis of the proposed dam. These deposits are unconsolidated, loose, permeable, and subject to liquefaction during an earthquake. Although no significant faults passing through the site have been identified, the alluvium would not provide an adequate foundation. Costly actions may be required to provide a suitable foundation – removal and recompaction or densification in place.

Other aspects of construction appear to pose little or no problem. Sufficient impervious, pervious, and riprap materials can be found within 2-miles of the dam site, potential staging and lay down areas are immediately upstream and downstream of the project site. Existing roads provide direct site access, and electrical power is likely available from sources in Porterville, along the county road within Hungry Hollow or Deer Creek valleys, or from high voltage power lines to the east.

Most of the inundated area would be common annual grassland. The reservoir would inundate up to 8 miles of Deer Creek, which supports well-developed sycamore alluvial woodland (SAW), an important regional wildlife habitat. Elderberry (*Sambucus mexicana*), the host plant for the valley elderberry longhorn beetle (a threatened species as listed by the federal government) is expected to be present in the riparian habitat. Wetland habitat may be present as well. Populations of fish and other organisms adapted to stream environments would be reduced or eliminated, while species suited to lake environments would be enhanced. Twenty-nine archaeological sites were identified in the late 1960s and it is likely that additional sites would be found with more extensive surveys.

This option has undesirable foundation conditions and would cause adverse and unmitigable affects to SAW habitat. It will be dropped from further consideration.

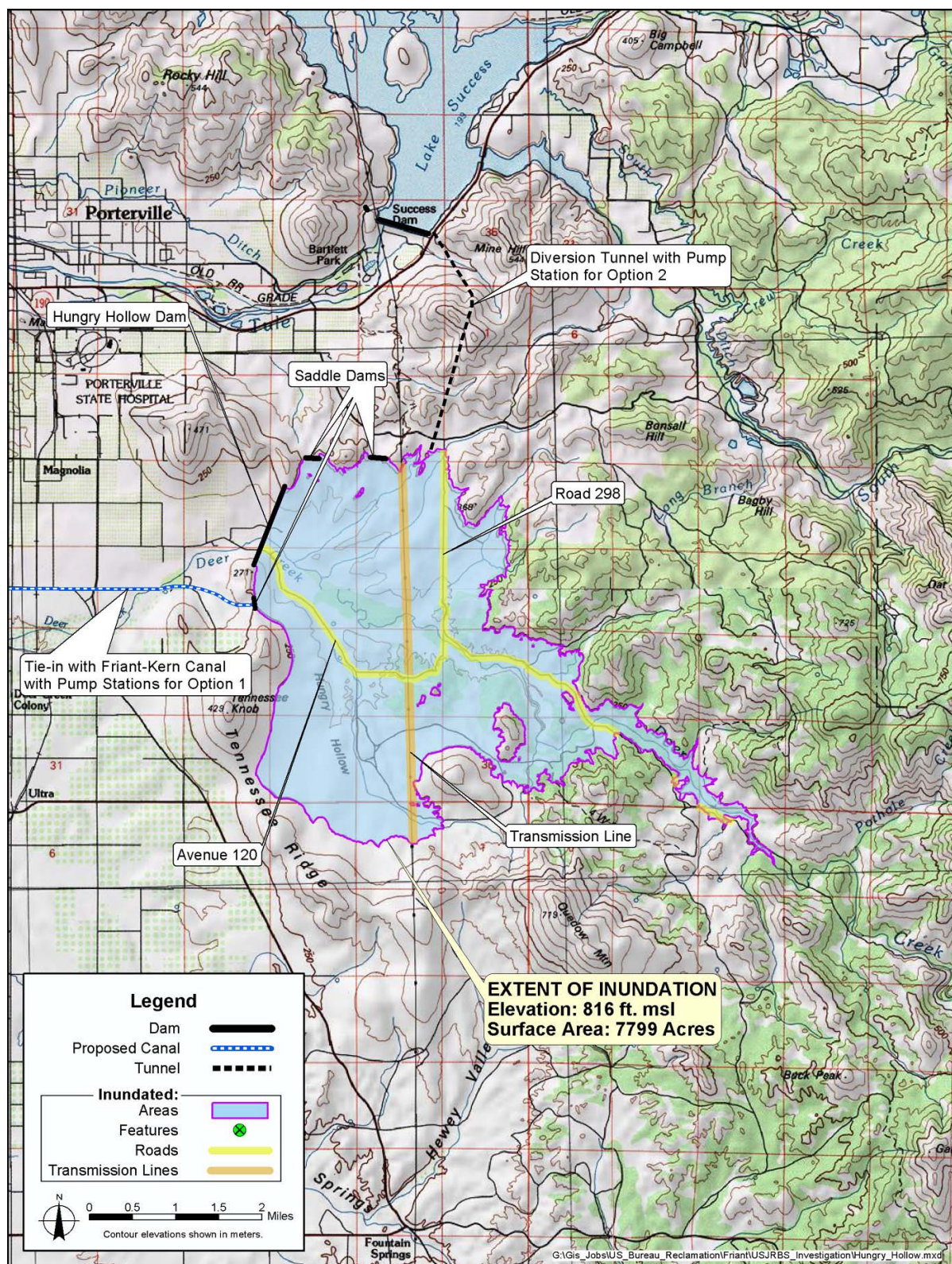


FIGURE 5-17. HUNGRY HOLLOW RESERVOIR OPTION

SUMMARY OF INITIAL SCREENING RESULTS

Table 5-2 summarizes the results of initial engineering and environmental screening of surface storage options. For each site, the table identifies undesirable engineering characteristics and potentially adverse environmental effects. The screening result to retain or drop is provided for each option.

The initial engineering review found that areas of primary concern relate to the stability of existing structures, geologic and seismic issues, and the quality of water that would be developed by the project. On the basis of this initial review, all other engineering issues were considered resolvable, although project costs would generally be proportionally higher for those options that required extensive preparation or rehabilitation.

The initial environmental review considered potential impacts to botany, wildlife, aquatic biology and water quality, recreation, and land use. Options that would result in adverse effects to environmental resources for which mitigation is not likely were dropped from further consideration.

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